CLAIMS

What is claimed is:

1. A method to generate a dither signal in a sigma-delta modulator, comprising:

at an input of a quantizer, dividing at least one input transistor into a set of transistors connected together in parallel;

generating a digital signal having random or pseudo-random characteristics; and

activating individual transistors of the set of transistors with the digital signal to generate a noise signal that is added to an output of the signal transistor.

2. A method as in claim 1, where there is a first signal transistor and a second signal transistor, and where said first input transistor is divided into a first set of transistors connected in parallel, and said second input transistor is divided into a second set of transistors connected in parallel.

3. A method as in claim 2, where a gate of each individual transistor in each of the first and second sets is switchably coupled by the digital signal to either an input signal in an active state or to another signal in an inactive state.

4. A method as in claim 3, where the another signal comprises circuit ground.

5. A method as in claim 2, where the input of the quantizer inputs a differential input signal via the first and second input transistors.

6. A method as in claim 1, where at least one dimension of the transistors of the set of transistors differs between at least two of transistors of the set of transistors.

7. A sigma-delta modulator, comprising:

an input node coupled to a first input of a loop filter;

a quantizer having an input coupled to an output of the loop filter for receiving a differential input signal therefrom; and

a feedback path coupled from an output of said quantizer to a second input of said loop filter;

said quantizer input comprising a first input signal transistor divided into a first set of transistors connected in parallel, and a second input signal transistor divided into a second set of transistors connected in parallel.

8. A sigma-delta modulator as in claim 7, where the gate of each individual transistor in the first set is switchably coupled by a digital signal to either an input signal (active state) or to ground (inactive state), and the gate of each individual transistor in the second set is switchably coupled by an inverse of the digital signal to either the input signal (active state) or to ground (inactive state).

9. A sigma-delta modulator as in claim 8, where said digital signal is generated to have random or pseudo-random characteristics.

10. A sigma-delta modulator as in claim 8, where the voltage signals comprise the input voltage signals.

11. A sigma-delta modulator as in claim 8, where the input signal comprises the differential input signal.

12. A sigma-delta modulator as in claim 7, where at least one dimension of the transistors of the set of parallel-connected transistors differs from at least one dimension of the other transistors of the other set of parallel-connected transistors.

13. A sigma-delta modulator as in claim 7, where a gate of each transistor of said first set of transistors is switchably coupled by a digital signal having pseudo-random characteristics to either the input signal or to ground, and where a gate of each transistor of said second set of transistors is switchably coupled by an inverted version of the digital signal to either the input signal or to ground for creating an imbalance in a quantizer input transistor structure that results in the generation of a desired pseudo-noise dither signal at said input to said quantizer.

14. A sigma-delta modulator, comprising:

an input node coupled to a first input of a loop filter;

a quantizer comprising a plurality of input transistors coupled to an output of the loop filter for receiving a differential input signal therefrom;

a feedback path coupled from an output of said quantizer to a second input of said loop filter; and

means for creating an imbalance in said quantizer input transistors that results in the generation of a desired pseudo-noise dither signal at said input to said quantizer.

15. A sigma-delta modulator as in claim 14, where said quantizer input transistors comprise a first input signal transistor divided into a first set of transistors connected in parallel, and a second input signal transistor divided into a second set of transistors connected in parallel, where said means for creating an imbalance comprises a gate of each individual transistor in the first set being switchably coupled by a digital signal to either said input signal or to potential resulting in an inactive transistor state and a gate of each individual transistor in the second set being switchably coupled by an inverse of the digital signal to either the input signal or to the potential, where said digital signal is generated to have random or pseudo-random characteristics.

16. A sigma-delta modulator as in claim 14, where said quantizer input transistors comprise a first input signal transistor divided into a first set of transistors connected in parallel, and a second input signal transistor divided into a second set of transistors connected in parallel, where at least one transistor in each of said first and second sets has a channel dimension that differs from a channel dimension of at least one other transistor in the respective one of the first or second sets.